September continues run of warm months

Description

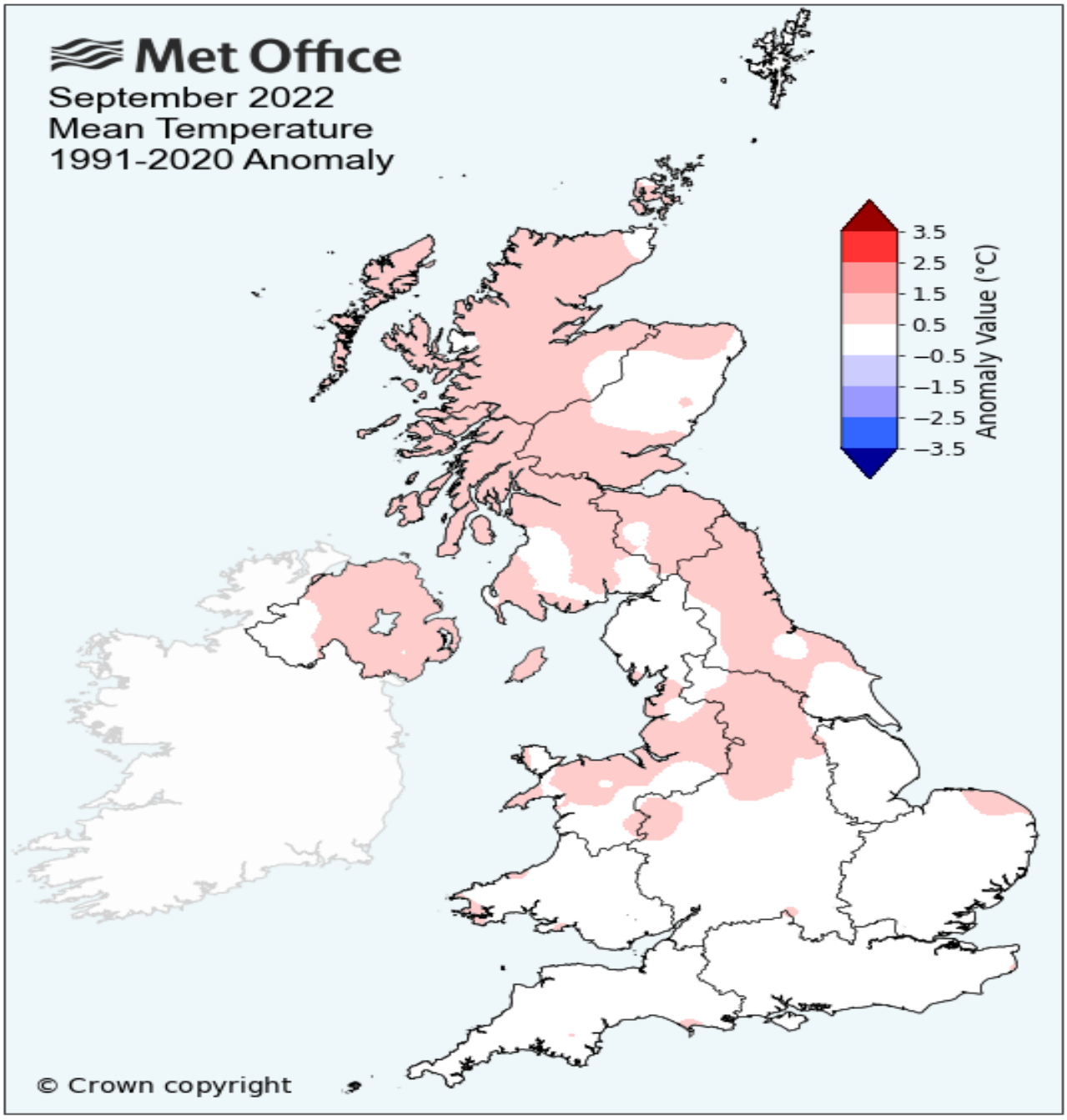
The first nine months of this year have provisionally been the warmest on record for the UK in a series which goes back to 1884.

September continued this year's run of every month so far being warmer than average according to mean temperature, with 13.4°C sitting at 0.5°C higher than the long-term average for the month.

Combined, the first nine months of 2022 have been warmer than the same period in any other year in a series which goes back to 1884. The previous record for the January-September period was 2014, which went on to be the UK's warmest year on record.

Dr Mark McCarthy of the National Climate Information Centre said: "The start of September continued the summer's theme of above average temperatures with high pressure dominating. As the month has progressed, an Atlantic influence has brought more unsettled weather, with some northerly winds in recent days bringing temperatures further down.

"Although 2022 is on track to be one of the warmest years on record if the warmer than average conditions persist, we can't rule out a period of below average temperatures during the coming months which would bring it below 2014's mean temperature for the calendar year."



September 2022 mean temperature versus the long-term average for the month.

Near-average rain this month

Late rain in September boosted totals to above average for some regions across the UK, although not enough to address the dry year so far.

An average of 101.3mm of rain fell across the UK in September, which is 11% more than average. It was a similar story across the UK, with Scotland seeing 9% more rain than average, England 10% and Wales 2%. However, Northern Ireland had 58% more rain than its average for the month, with a total of

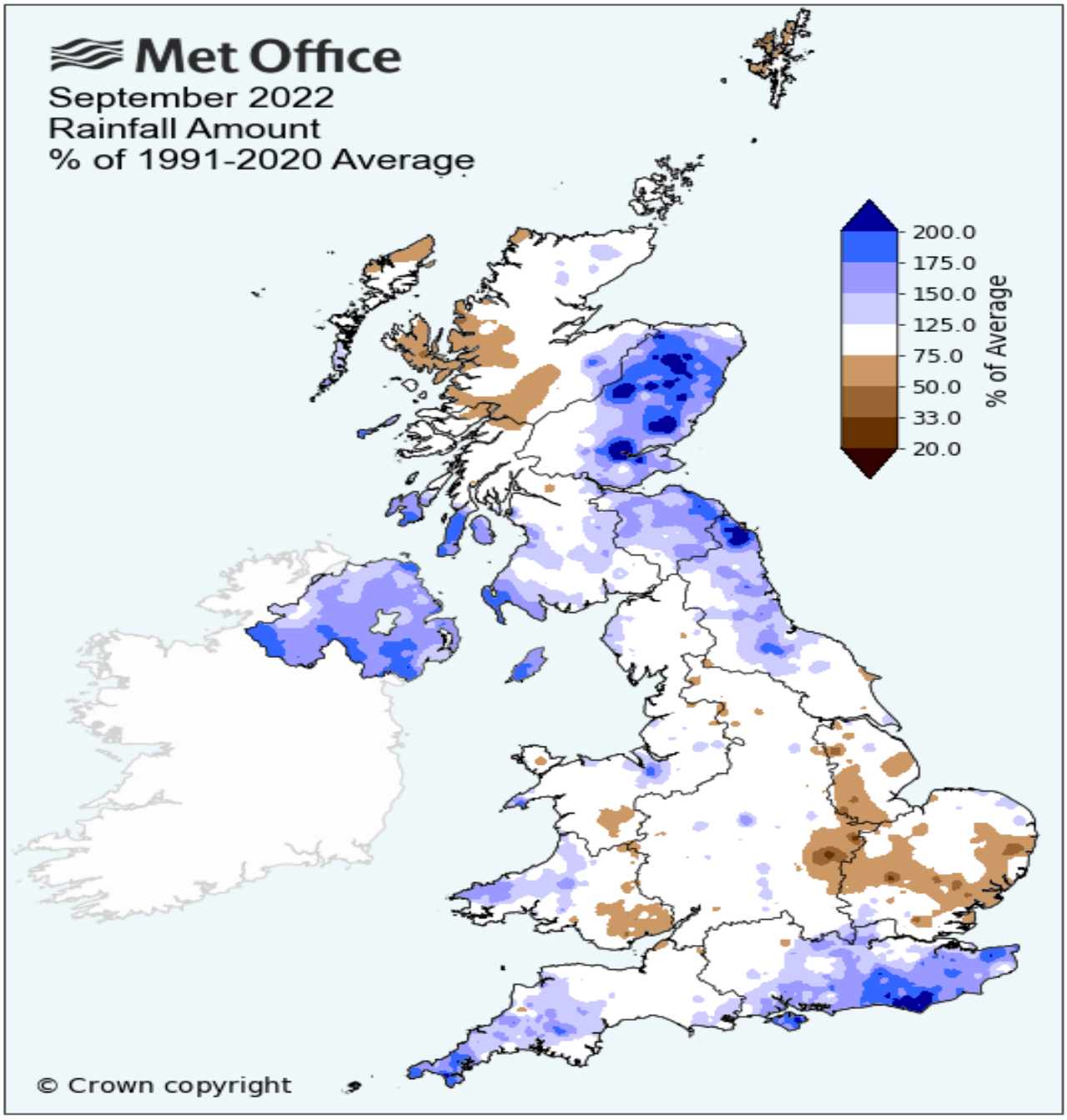
138.7mm falling.

Despite near-average rain for most in September, the first nine months of the year have still been significantly dry, especially in areas to the south and east. Provisionally, rainfall from January-September 2022 in the UK has been 639mm. This makes the first nine months of the year the driest since 2003 (595mm).

For England, January-September 2022 has seen 424mm of rain, which is the ninth driest for the period and the driest since 1959 (400mm). East Anglia has been particularly dry, with 267mm of rain so far this year. This is the third driest on record, with only 1921 (241mm) and 1929 (251mm) drier for the same period.

Mark McCarthy added: “September’s near-average rainfall has done little to offset the rainfall deficit built up over the year so far for some areas of the UK, especially in the south and east. 1976, which has long been used as the yardstick for hot and dry weather, had an exceptionally wet September, meaning it no longer threatens the dry records at this point in the year.

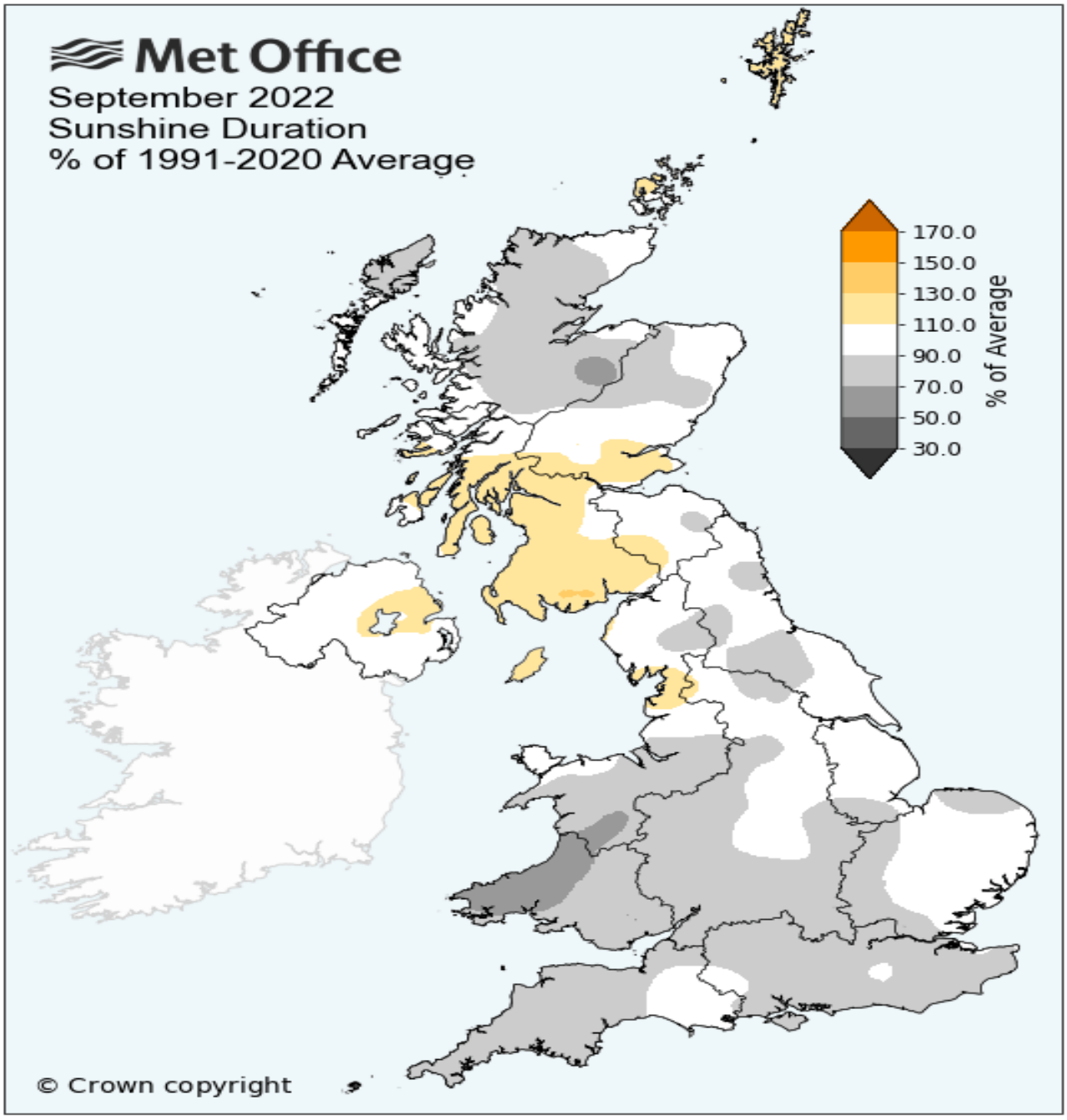
“The influence of Atlantic weather systems from the west has brought with it some rain, with the late month rainfall managing to tip many areas of the UK to totals slightly above average for the month of September.”



September 2022 rainfall amounts versus the long-term average for the month.

Dull for most

Sunshine hours were in relatively short supply for some, although not enough to trouble any records. The UK was 8% duller than average with 117.3 hours of sunshine. Wales was particularly dull, with 25% fewer sunshine hours than average at 97.5 hours. Northern Ireland, despite seeing more than its fair share of rain, had 4% more sunshine than average with 117.8 hours.



September 2022 sunshine hours versus the long-term average for the month.

Provisional September 2022	Mean temp (°C)		Sunshine (hours)		Rainfall (mm)	
	Actual	Diff from avg (°C)	Actual	% of avg	Actual	% of avg
UK	13.4	0.5	117.3	92	101.3	111
England	14.3	0.4	126.3	89	75.2	110
Wales	13.5	0.4	97.5	75	113.6	102
Scotland	11.9	0.6	107.1	100	134.7	109

N Ireland	13.2	0.6	117.8	104	138.7	158

Date Created
October 2022

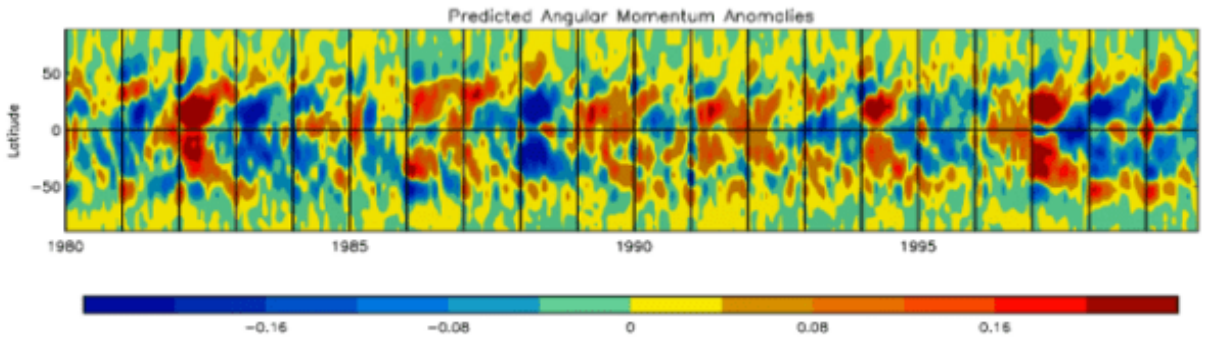
Days get longer when the wind blows

Description

How long is a day on earth? The obvious answer of 24 hours is accurate enough for many applications. But for those interested in GPS or deep space, then understanding the fluctuations of about one millisecond in the length of a day can be fundamentally important.

A team at the Met Office, led by Professor Adam Scaife, has calculated that these length of day fluctuations are predictable out to more than one year ahead and this is all to do with predicting the strength of atmospheric winds.

The stronger the winds blow around the Earth, the slower the Earth rotates to compensate and hence the longer the length of day. The findings were published yesterday in *Nature Geoscience.*



The figure shows predicted changes in the wind strength for example cases starting in November 1980. The higher the predicted changes, the longer the length of day.

Commenting on his research, Professor Scaife said: “The fact that global winds can affect the speed of the Earth’s rotation is a consequence of Newton’s laws of physics and has been known for a long time. What’s new here is that we can predict these fluctuations many months and even a year or two ahead.

“Although the change in the rotation of the Earth has no direct effect on the atmosphere (it’s just too small), the compensating change in the winds is much bigger and is strong enough to change regional weather and climate.

“It turns out that the jet stream in the mid-latitudes is affected with a lag of about a year after the length of day first changes in the tropics (often triggered by El Niño or La Niña). This has applications in long-range forecasting and is another piece in the puzzle of long-range weather prediction.”

One of the really novel things the team discovered is that these predictable signals are lurking in the atmosphere and are not in the ocean where we normally look for long-range weather and climate signals. “This means that there is a long-term memory within the atmosphere – opening all sorts of interesting possibilities.

The paper *Long-range predictability of extratropical climate and the length of day* will have many applications including potentially even calculating the timing of when a leap second needs to be added to the clocks keeping track of global time.

This research was supported by the UK–China Research & Innovation Partnership Fund through the Met Office Climate Science for Service Partnership (CSSP) China as part of the Newton Fund. It was also supported by the Met Office Hadley Centre Climate Programme (HCCP) funded by BEIS and Defra and by the European Commission Horizon 2020 EUCP project.

Date Created
October 2022

Pollen levels were higher than average this year

Description

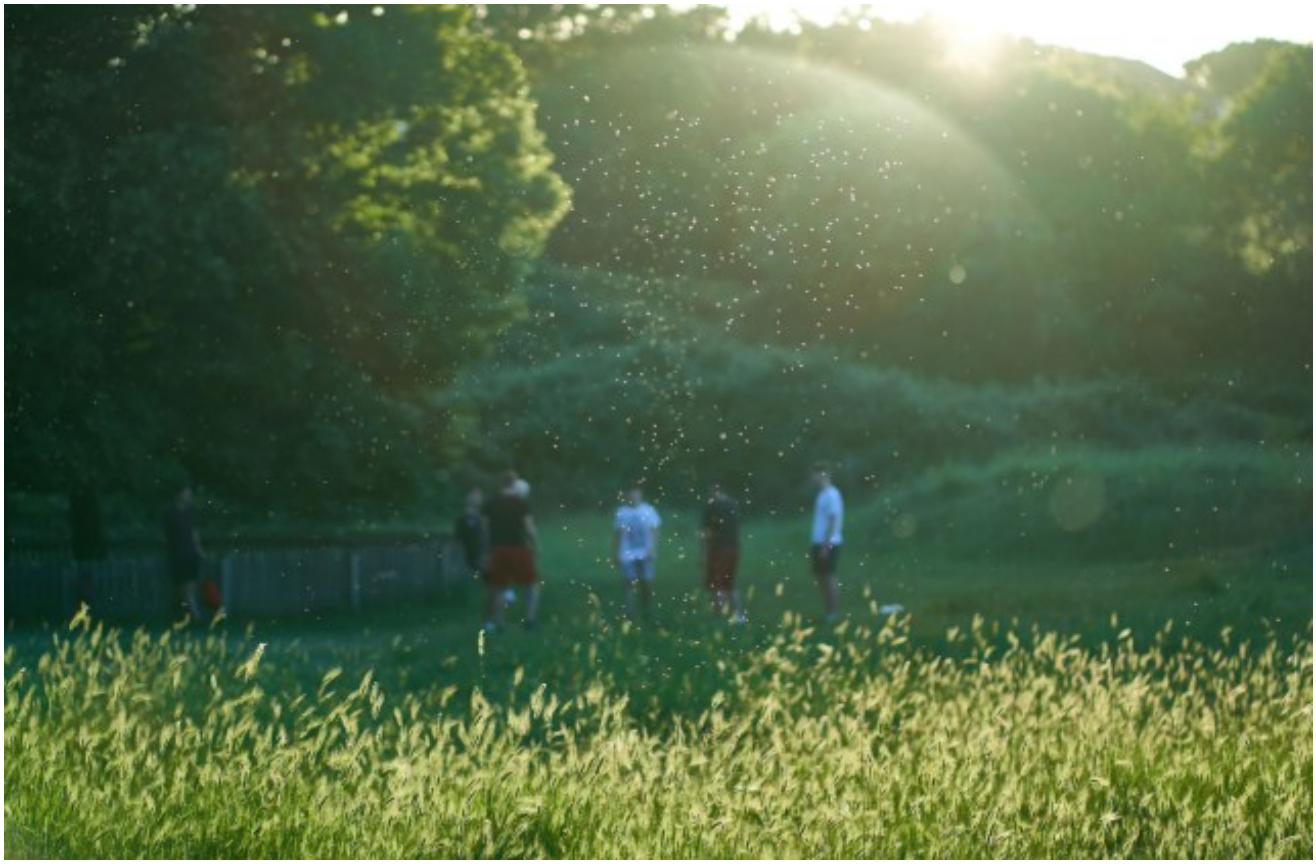
This year’s pollen season was worse than average for hay fever sufferers according to data from the Met Office.

As memories of warm summer days ease away, hay fever sufferers might be forgiven for being pleased for a more autumnal feeling to the weather as concentrations of pollen in the air have now eased off.

Grass pollen

According to data which looks at the concentration of pollen grains in the air across the UK, 2022’s pollen season was above average, with grass pollen – which the vast majority of hay fever sufferers have an allergy to – proving to have more days of high pollen counts than average.

The onset of the grass pollen season occurred at around the average date in the south and the Midlands, from 18 May, while Scotland’s grass pollen season started around a week later than average on 9 June. A mild winter and a subsequent warm May helped develop production of pollen for much of the main grasses in the UK, except for East Anglia where the conditions were less suitable.



It’s estimated that more than 10million people in England have hay fever

In terms of number of days with high pollen counts (when the daily average of pollen grains is more than 50 per cubic metre of air), Scotland had its worst season in 11 years, Worcester its worst in 15 years and Leicester its worst year since records began at the site.

Met Office Relationship Manager for Health and Air Quality Yolanda Clewlow said: “Although there were no exceptional values in terms of pollen in the air on given days, what is noteworthy is the persistently high pollen counts we’ve seen this season.

“A mild winter, coupled with near-average rain in the growing month of May, resulted in a good deal of pollen generation for the summer months. The subsequent dry conditions helped this pollen to remain in the air for more days than average this year.”

With an earlier start, the season didn’t last as long as it had in previous years, with July’s record-breaking heat flushing out the pollen quickly, while many areas in the south had grasses that died back in the heat.

Yolanda continued: “The heatwave in mid-July really saw the back of the high levels of grass pollen in the air, with the continued dryness also preventing much further pollen development.”

Tree pollen

Tree pollen, which can also affect some people with hay fever, had a varied season across the UK. Birch tree pollen started early in most regions due to a mild February and March. The season saw near-average pollen levels in the east, while less prevalent in the north and west. Dry weather in April allowed for good dispersal of pollen than was produced.

The oak pollen season started around average in the southeast and West Midlands, around 22 April, but was slightly earlier in the East Midlands. The severity of the oak pollen varied significantly across the UK this year, with places in Scotland seeing almost no oak pollen, whereas the Midlands, Worcester and Leicester recorded higher than average oak pollen totals.

Yolanda concluded: “Tree pollen had a more varied season to grass pollen thanks to the slightly shifted weather patterns in the growing season for trees. Although most people with hay fever don’t feel any impacts from tree pollen, those who do might have felt worse in the Midlands and surrounding areas, as opposed to the north of Scotland where very little oak pollen was recorded at all.”

During the pollen season, the Met Office app offers notifications on pollen in the air.

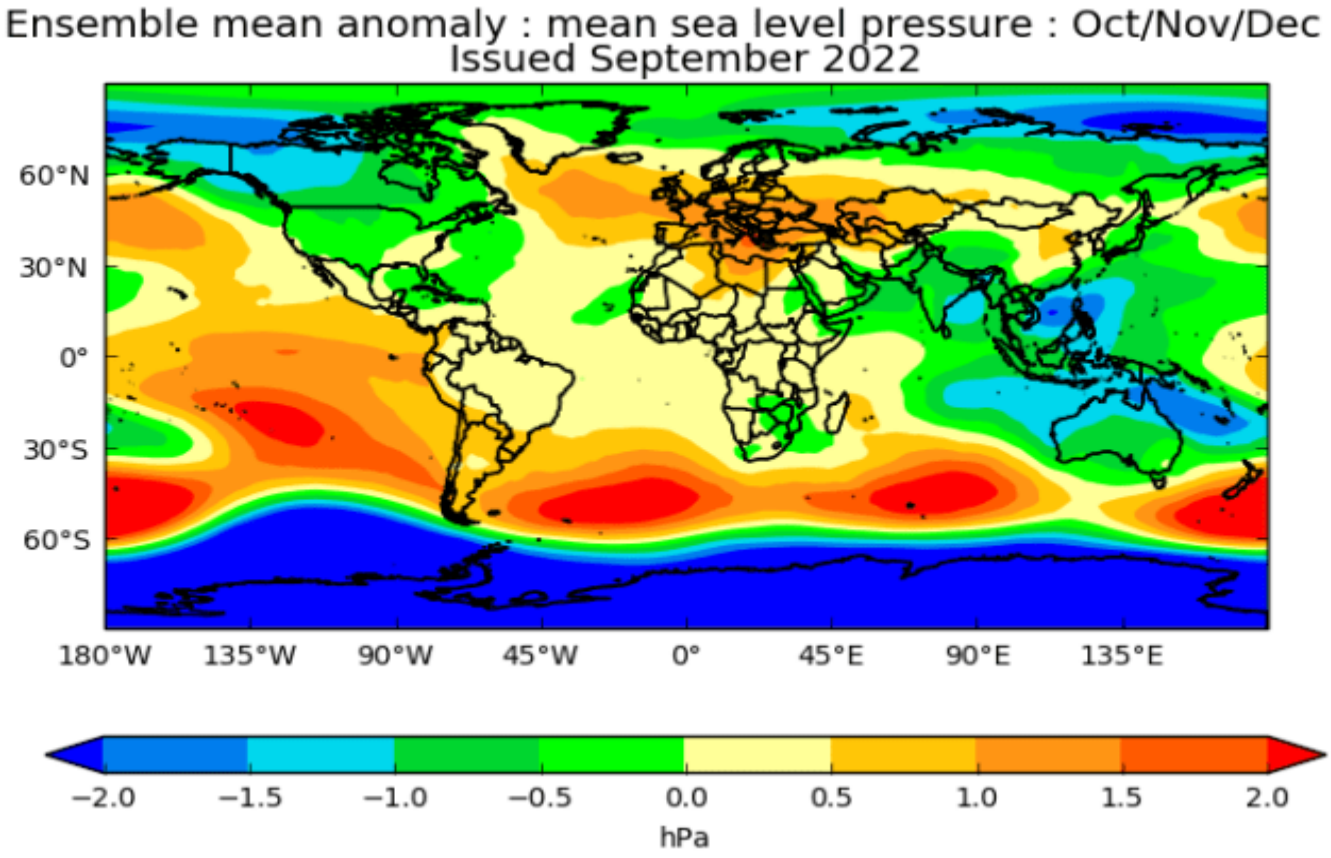
Date Created
October 2022

What can we say about the weather this Winter?

Description

Professor Paul Davies Met Office Fellow (Meteorology) and Chief Meteorologist said; “Weather patterns for **October** look mobile with a westerly or south westerly air flow likely to bring Atlantic weather systems across the UK at times, resulting in periods of wet, and potentially windy weather, a greater proportion of which will affect the north and west. Temperatures are predicted to be above average in October.

“November and December look more settled with high pressure likely to dominate our weather. Exact weather conditions will be dictated by where the high pressure settles over the Atlantic and the UK, but we are likely to see a higher incidence of northerly airflows, preventing mild, moist air flowing to the UK from the Atlantic Ocean and increasing the potential for cold snaps with some threat of snow and ice, mainly in northern areas.



“The most likely scenario as we head into **2023** is for the risk of high-pressure to decrease, and areturn to more unsettled conditions with wet, windy, and mild spells possible. However, there is still arisk we could see a Sudden Stratospheric Warming. If this happens it could potentially lead to a coldspell for the UK and northern Europe, although the chances of a very cold winter, comparable to2009/10, are still low this winter.”

Professor Davies added; “It is important to bear-in-mind that long range outlooks are driven by global weather patterns and even if these influences, for example, suggest a higher-than-usual chance of a mild winter this would not rule out having cold spells, or even a cold winter. These scenarios would just be less likely based on the information available at the time the forecast is made. It is therefore also important to examine our regular monthly updates to the long-range outlook.

“Long range outlooks are unlike weather forecasts which cover the next few days. The science in this area is at the cutting edge of meteorology and the Met Office is one of the leading lights in this research area. Even with ‘perfect’ prediction systems and ‘perfect’ meteorological observations, the fundamental chaotic nature of the atmosphere will still limit the skill of these predictions.

“Although, the science, as yet does not allow for specific detail on, for example, the number of nights of frost, rain or snow over the coming months or when specifically severe weather may occur, long-range forecasts can provide useful information on the possible conditions averaged over the UK for a season as a whole. These predictions give an indication of how likely certain types of conditions, that may impact transport, energy, health etc., will be; allowing planners in these sectors to prepare accordingly. As we go through the winter months, we will obviously be able to give more detail of any potential winter hazards and will issue updated forecasts and warnings as and when needed.”

Winter Weather Drivers

One of the main influences on European winter weather is the North Atlantic Oscillation (NAO) – a positive phase corresponds to windy, mild and wet conditions, while a negative phase is related to still, cold and dry weather, which means we can obtain some indication of how likely a windy winter is. Another global factor that could influence the UK this winter is La Nina, a cooling of the ocean in the tropical Pacific. This promotes the development of high pressure in the Atlantic in late autumn and early winter which can lead to the potential for cold snaps for the UK. Conversely, sea-surface temperatures around the UK are above average for the time of year, meaning above average land temperatures are also possible.

You can check the latest weather forecast on our website, by following us on Twitter and Facebook, as well as on our mobile app which is available for iPhone from the App store and for Android from the Google Play store. Our long range outlooks are updated monthly. Keep track of current weather warnings on the weather warning page

Date Created
October 2022

Building resilience across East Africa through the production and communication of seasonal forecasts

Description

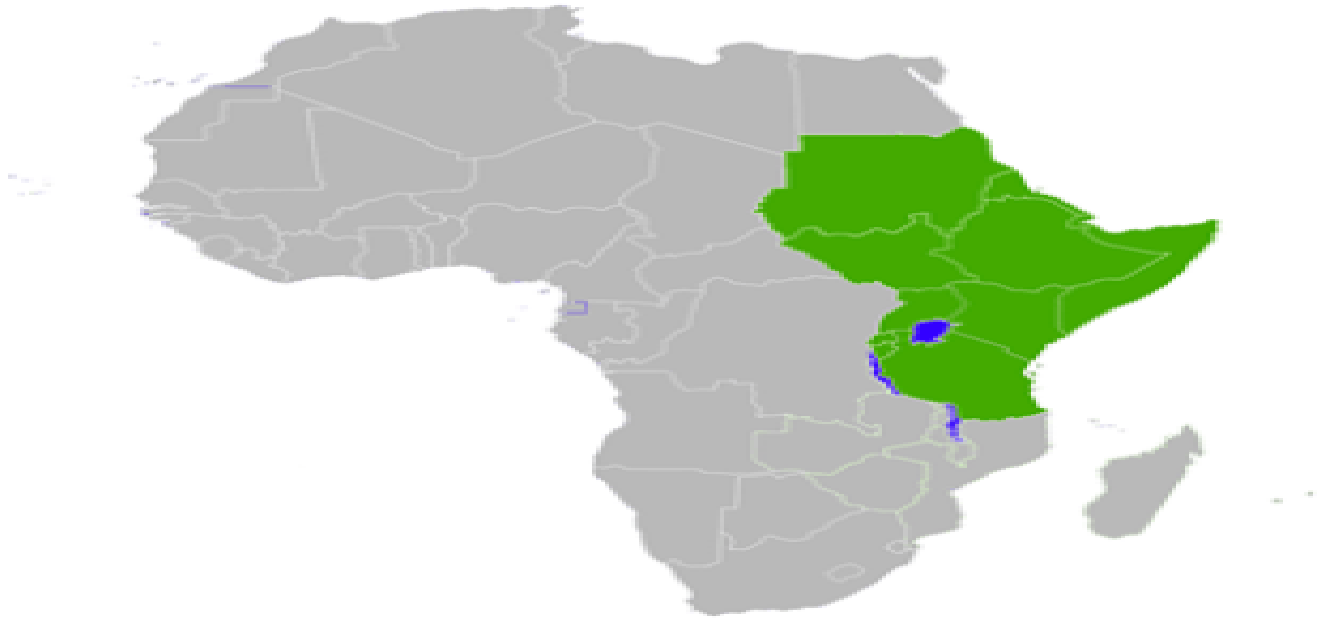
By Collison Lore (ICPAC) & Stefan Lines (Met Office)

The importance of seasonal forecasting

Due to a combination of climatic extremes and vulnerable communities, East Africa is the focus of much research, engagement and action. The WMO Regional Climate Centre, the Intergovernmental Authority of Development's (IGAD) Climate Prediction and Applications Centre (ICPAC), is the focal point for regional-level weather to climate coordination across the Greater Horn of Africa (GHA).

Amongst other mandated responsibilities, ICPAC works with a variety of national, regional and international partners, including National Meteorological and Hydrological Services (NMHS) and Non-Governmental Organisations (NGOs), to provide people across the area with climate information for decision making.

Long-term climate information can provide opportunities for adaptation against the impacts of long-term anthropogenic trends in temperature and rainfall, but many of the region's economies are dependent on seasonal changes, as these underpin the ability for sectors such as agriculture, pastoralism and energy production to be resilient against variability in rainfall that occurs inter-annually.



East Africa countries (shaded green) covered by ICPAC. Note, not all countries are IGAD member states, but still benefit from the seasonal forecast. Figure: Creative Commons

To make the situation more complicated for weather and climate prediction, the climatic conditions in

East Africa are varied, ranging from hot, dry desert regions, to cooler, wetter highland regions, and large variability in seasonal rainfall is experienced. Agriculture is the mainstay of the economies of the population in the region, a significant majority of which is food insecure.

Over 95% of the region's food production is thus rainfed, yet only a minuscule percentage of public agricultural water investments support rainfed agriculture. Furthermore, access to regular and fairly accurate weather forecasts is limited.

This then feeds into the vicious cycle of hunger and poverty that are major issues for the region.East Africa is currently facing the prospect of a fifth consecutive 'failed' rainy season – that is, the fifth back-to-back Short and Long-Rains (March, April, May & October, November, December) which produces less than normal or 'average' rainfall, where the average is determined from an assessment of the climate over the last thirty years.

Such a significant lack of rainfall is driving a vast drought over large parts of the region, which is in turn cascading to increased food insecurity and hence famine for millions. The latter has been compounded by external socio-political and economic factors, such as grain import availability and cost due to recent geopolitical instability.

Is the situation in East Africa changing?

Weather and climate stakeholders are well aware of the challenges facing the region and have teamed up to seek viable home-grown solutions. ICPAC is a Climate Centre accredited by the World Meteorological Organization that provides climate services to 11 East African countries. ICPAC services aim to create resilience in a region deeply affected by climate change and extreme weather, and has worked closely with NMHSs in the region, UN agencies, regional NGOs and other key regional institutions.

One crucial partner working with ICPAC is the Met Office, the UK's national meteorological service, which provides critical weather services and world-leading climate science to help the public, government, businesses, and emergency responders stay safe and thrive.

ICPAC and the Met Office have worked together closely on projects and programmes such as Weather and Climate Information Services (WISER), Horizon 2020 CONFER and Global Challenges Research Fund (GCRF) African SWIFT, assessing a wide range of timescales (weather, sub-seasonal, seasonal and long-term climate change). Combined they have increased capacity in the region to understand, produce and communicate weather and climate information that will support decision making to benefit lives and livelihoods.

Seasonal forecasting: building capacity

ICPAC, Met Office and NMHSs across East Africa convene for the ‘PreCOF’ workshop in August 2022, producing the October to December (short-rains) forecast for the GHACOF. Image: ICPAC

A long-standing activity between ICPAC and the Met Office has been to work together to enhance capacity to produce and communicate seasonal forecast information. Through projects such as WISER and CONFER, the two institutions have worked together closely to provide training and ongoing support to the region’s NMHSs.

Since 2019, when ICPAC transitioned from a subjective, consensus-based approach to an objective forecasting method for its Greater Horn of Africa (GHA) seasonal outlook, a comprehensive framework for enhancing capacity building within the sphere of seasonal information has been in action.

Typically, this starts with a two to three week training workshop which covers a wide range of topics including drivers of seasonal variability, ensemble systems, verification, use of advanced software, and a detailed overview and practical use of ICPAC’s objective forecasting procedure.

Each NMHS provides a representative forecaster who then takes part in three of the Climate Outlook Forum (COF) forecast production workshops, termed PreCOF. PreCOFs immediately precede the tri-annual GHACOFs which provide seasonal outlooks for the Long-Rains , Short-Rains and June, July, August, September. During the PreCOF workshop, participants co-produce the forecast alongside ICPAC and the Met Office, developing various products such as tercile maps (probabilities of above/below normal conditions), onset likelihood, as well as verification of the previous season.

Supporting holistic training in weather and climate communication

The training has evolved from a capacity building for the media approach to general stakeholder and media training. The shift in emphasis from a monolithic approach of capacity building of the media is in realisation that the media works in tandem with a wide range of partners especially in the context of weather and climate.

During the month of June, as part of the CONFER project, ICPAC undertook capacity enhancement activities involving four countries in the East Africa region. These countries included Sudan, South

Sudan, Ethiopia and Uganda. More countries are lined up for future engagements.

The actors whose capacity is being built include the media, specifically community radio targeting vulnerable communities, forecasters, meteorological agency communicators, policy makers in Disaster Risk Reduction, and Agriculture and Food Security. The capacity building also involved active physical visits to meteorological offices in the host countries to understand both challenges and innovation and lessons learned overtime on the provision of seasonal forecast information.

Presenting the October, November & December 2022 forecast in Swahili during the 62 GHACOF in Mombasa, Kenya. The use of local languages in communicating the forecast ensures a wider audience having access consequently leading to enhanced uptake and application. Image: ICPAC

Leveraging data-driven observations

ICPAC, through CONFER specifically and the Met Office generally, are adopting a real-time, data-centric approach to improve the accuracy of weather forecasting. Backed by high-performance computing solutions (with much of the forecast processing being done on the WISER-funded ICPAC cluster), ICPAC collects, analyses, and acts on a surge of geospatial data.

Consequently, ICPAC scientists utilise prognostic analytics to reveal patterns in historical data combined with current observations in order to derive real-time insights for more accurate and informed forecasts.

Increased uptake and application of seasonal forecasts

Stakeholders at the sub-national level in Kenya discussing the forecast, the quality and accuracy of the forecast has continued to improve. As a result of ICPAC, the Met Office and other NHMS partners working together. Image: ICPAC

In supporting the ICPAC team during the preCOF activities, GHACOF and beyond, the Met Office indirectly ensures increased uptake and application of seasonal forecasts. Seasonal forecasts can play a vital role in building the resilience of vulnerable populations against an increasingly variable and extreme climate, in the Eastern Africa region.

The partnership between ICPAC and the Met Office therefore aims to ensure seasonal forecasts become more usable and impact-relevant. More information about the Met Office's role at GHACOF can be found in the recent post from Tammy Janes and Scott Burgan.

This is why ICPAC has gone a step further to foster collaboration with users through an effective two-way communication from both parties. Today, thanks to the partnership with ICPAC, users of weather and climate information along the entire information value chain are increasingly using seasonal forecasts for decision making.

Date Created
October 2022

Refreshed maps for Met Office app and website

Description

You may have noticed a new look to the interactive UK weather forecast maps on our website and app.

The major upgrade gives you an enhanced picture of weather for the next five days wherever you are in the country, so you can make better decisions to stay safe and thrive.

Accessibility in mind

The new website maps have been designed to enhance the user experience on all devices, especially mobile phones and tablets.

You can choose between eight website maps showing rainfall, temperature, average wind speed, wind gust maximum, precipitation type, cloud cover, weather symbols and rainfall accessible colours.

The rainfall map helps users to see when, where and how much it will rain, while the precipitation-type map also shows hail and snow.

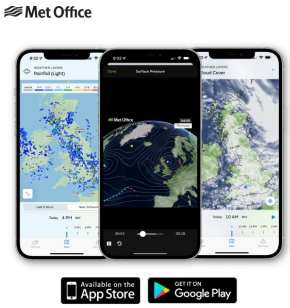
The app version for iOS and Android users includes improved rainfall and surface pressure maps, and a new cloud cover map, so people can see the movement of weather patterns more easily.

We have also improved the visibility of the website and app maps by updating the colour scheme, with a particular focus on those with colour vision deficiencies.

Longer-range weather information

Additionally, we have added longer-range weather information, so people know what conditions to expect and can plan for the next five days.

While the website and app are constantly evolving, the redesign of the maps represent their first significant upgrade for several years.



Lucy Gibbs, Digital Product Manager for the Met Office website, said: “We’re delighted to launch our new weather maps on our public website, as well as our iOS and Android mobile apps, which will enhance the experience of many of our users.

“The aim of the upgrade is to improve the resilience of the weather data on our website and mobile apps, ensuring people can always get weather data when they need it.

“As well as technical improvements to the data source, extensive user research was carried out during each stage of the process to ensure we are meeting user needs and providing an enhanced user experience.

“We want to make it as easy as possible for everyone to access our world-leading, accurate weather forecasts, so they can better prepare for whatever weather is in store.

“We hope you enjoy using our new maps. We’ll keep listening to your feedback and making changes as we keep evolving.”

Click here to see the website version of the new maps or download the latest version of our app.

Date Created
October 2022

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How will future climate extremes impact the hydropower sector in Nepal?

Description

Rosie Oakes is a Senior Scientist in the International Applied Science and Services Team at the Met Office. Rosie works with partners around the world to ensure that climate information is useful and usable, helping people make climate informed decisions and increase their resilience to climate change. Rosie is also the co-host of the Mostly Climate podcast.

Nepal is a landlocked country in South Asia, nestled in the magnificent Himalayan Mountain range, which includes Mount Everest. Home to 30 million people, the population are looking to the mountains for their energy source. Nepal currently generates 90% of its electricity from hydropower. Further expansion is planned for the future, with goals of becoming a net power exporter by 2030. 94% of the population currently has access to electricity but the demand is increasing as living standards across the country improve. The expansion and reliability of energy generated from hydropower are therefore a priority for the Nepalese government.

The hydropower sector is intricately linked with climate, particularly rainfall. Nepal experiences an annual monsoon from July to October when river flows are high. The amount of power a hydropower plant can generate is linked to river flow, with more power generated at high flow, and less power at low flow. But what happens when river flow is exceptionally high?

The Hindu Kush Himalayas are a geologically-young mountain range, formed 55 million years ago when the Eurasian Plate collided with the Indian subcontinent, and they are still growing today. The fresh rocks exposed during mountain building, combined with constant tectonic activities from the colliding plates which cause landslides, mean there is a lot of sediment in the river basins. When the river is at high flow, it has more energy meaning it can carry more sediment as load. This sediment can damage dam structures and key turbine components limiting energy generation (Figure 1).

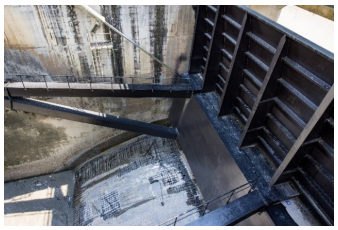

Figure 1: high sediment load can cause damage to dam structures such as the gates at the intake sight (left) and the turbines (repaired turbine, right). Photo credit: Rosie Oakes

At even higher levels of river flow, entire hydropower plants can be destroyed by high rainfall events.An example of this was seen in Jure in 2014 where heavy rains triggered a landslide, damming the Sunkoshi River. The water that built up behind the temporary dam submerged the powerhouse of the Sanima Hydropower project and washed away two gates at the Sunkoshi Hydroelectric project.Overall, five hydropower stations and several transmission lines were damaged which reduced Nepal'spower generation capacity.

The Met Office has been working with partners in Nepal for the past four years under the Asia Regional Resilience to a Changing Climate (ARRCC) programme funded by the UK's Foreign Commonwealth and Development Office (FCDO). The aim of the project was to understand the current risk of extreme climate events to the hydropower sector, and how these may change in the future as human-induced emissions continue to increase, changing the climate. After a couple of years of virtual meetings, a team from the Met Office visited Nepal in July 2022 to bring people working in the hydropower sector together to talk about how they can increase the climate resilience of this vital sector.

In a meeting room at the International Centre for Integrated Mountain Development (ICIMOD), private hydropower owners, government policy makers, electricity buyers and suppliers, engineers and climate scientists gathered together to share knowledge (Figure 2).

Figure 2: hydropower owners, engineers, policy makers, and climate scientists got together to share knowledge and work towards increasing the resilience of the hydropower sector to climate change.
Photo credit: Utsav Maden, ICIMOD

We have found the current risk of extreme rainfall is higher than would be expected by looking at the relatively short observational record. As the climate continues to change driven by increases in human emissions, the magnitude of extreme rainfall events are projected to increase by 0 to 40 % by 2050 and 0 to 110% by 2080. The ranges are based on which emissions scenario we use including how many fossil fuels are burnt, with lower changes correlated with lower emission scenarios.

From a hydropower design and operation perspective, there is a lot of interest in preparing plants for future climate change. However, climate science is only part of the information these business owners and engineers need to consider when planning for the future. They also need to ensure that their businesses are profitable, that loans are repaid, and their designs don't exceed budget and are resilient to other hazards such as earthquakes and droughts. The uncertainty surrounding future climate projections means they need to calculate how much risk they can take, considering aspects such as whether they will be financially rewarded for having more climate-resilient power supply.

A changing climate also represents a significant challenge for established hydropower facilities such as the Marsyangdi plant that Met Office scientists visited during our trip. This plant had been commissioned 33 years ago, designed based on historical observations from 1989 and earlier. These data represent a different climate than that of Nepal today, and potentially a very different climate than the country will face by the middle or end of the century.

Increasing the resilience of the hydropower sector in Nepal can't happen overnight, but the conversations that were started during the project and continued during the visit have laid the foundations for next steps. These could involve training different users in using climate data, making relevant climate data accessible to users, and starting conversations about whether electricity generated from a more climate resilient plant could fetch a higher cost at market. Regardless of the next steps, this project has highlighted the value of tackling big problems with a diverse group of thinkers, all bringing their individual expertise and working together to find a solution.

Further reading:

To learn more about the Asia Regional Resilience to a Changing Climate programme, visit this website: Asia Regional Resilience to a Changing Climate

To hear more about the project and visit to Nepal, listen to Rosie Oakes and Hamish Steptoe talk to Doug McNeall on the Mostly Climate podcast: https://youtu.be/cNwVOWDz8tM

To learn more about the work that FCDO fund internationally, visit the development tracker. Climate projects can be found by filtering for 'disaster relief' and 'education': FCDO Development Tracker

Date Created
October 2022

International collaboration for space weather experts

Description

As the UK weather continues its shift to a more autumnal feeling, weather of a whole different kind has been under the microscope in Croatia this week, and it takes place beyond earth's atmosphere, space weather.

Leading scientists from across the world gathered as part of European Space Weather Week in Zagreb to discuss the latest developments in space weather.

Scientists, researchers, forecasters and users of space weather forecasts were in attendance, collaborating on learnings and developing links for future projects. Over 300 people were in attendance, with others joining talks online from around the world.

The Met Office Space Weather Operations Centre (MOSWOC), as one of a handful of 24/7 space weather forecasting centres in the world, was in attendance and even did a live space weather forecast while at the event.

Northern Lights. Picture from Richard Ellis, Royal Photographic Society.

Met Office Space Weather Senior Account Manager Krista Hammond said: "It has been a really interesting week. There has been a whole range of activities and sessions. There were some science-

based sessions where scientists were sharing their latest research, as well as some end-user focused discussions.

“As leaders in space weather science we’re also sharing our experience. I’ve been talking about our work with the aviation industry and sharing how we operate as a 24/7 space weather forecasting centre.”

With discussion points for scientists focusing on the technicalities of space weather forecasting and potential impacts, it’s easy to forget one of the most obvious ways people can see space weather in action, the Northern Lights.

Krista said: “The Northern lights, which is that beautiful display of light that we see across high latitudes, is the main way people are indirectly aware of space weather. That light is indicating there’s a stormy solar environment, and that’s the most obvious visual representation of space weather.”

Solar flares, solar radiation storms and coronal mass ejections are the principal interest for space weather forecasters. While space weather is responsible for the spectacle of the Northern lights, it also has the potential to impact across international borders, which is why it’s so important that researchers collaborate and share learnings.

Krista continued: “Space weather can cause disturbances in near-Earth space and our upper atmosphere, and those disturbances can cause impacts on our technology and infrastructure here on earth. By that I mean things like our communications systems or satellite systems and some of our ground-based infrastructure.”

Looking ahead

The theme for this year’s European Space Weather Week was ‘The importance of comprehensive space-weather monitoring’; something that isn’t lost on the Met Office, as they continue to develop their space weather forecasting capability.

The MOSWOC is currently part-way through contributing to a four-year programme that will improve the UK’s capabilities for space weather monitoring and prediction, known colloquially as SWIMMR (Space Weather Instrumentation, Measurement, Modelling and Risk). Led by the Science and Technology Facilities Council with the Natural Environment Research Council, the aim is to improve the UK’s ability to predict space weather, with five projects running as part of SWIMMR.

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